

[SySEC]

SYSTEM FOR THE SELECTION
AND EVALUATION OF DRIVERS



EVALUATION OF THEORETICAL KNOWLEDGE

EVALUATION OF THE LEVEL OF DRIVING CONTROL

RELIABLE, TESTED, RAPID AND AUTOMATIC SELECTION

• Introduction

SySEC was devised by a group of driving professionals and university academics.

It gives an objective evaluation, according to a previously established notation scale, of the theoretical knowledge of a driver and of his level of driving control.

• Applications

- Evaluation of driving: **SySEC** presents a series of ability tests enabling employers to be sure that the drivers they recruit will assimilate driving lessons effectively.

- Evaluation of risk taking: **SySEC** evaluates professional drivers faced with dangers and hazards on country roads and in an urban environment.



• DRIVING EVALUATION



• Knowledge of the vehicle

This module makes it possible to assess the student's theoretical knowledge of the vehicle.

The questions are grouped into 4 topics:

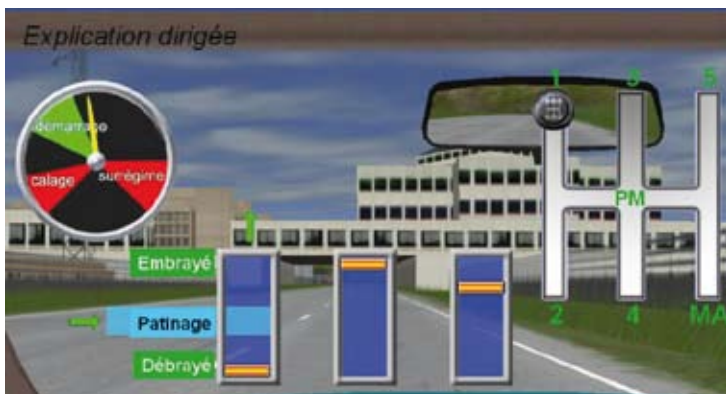
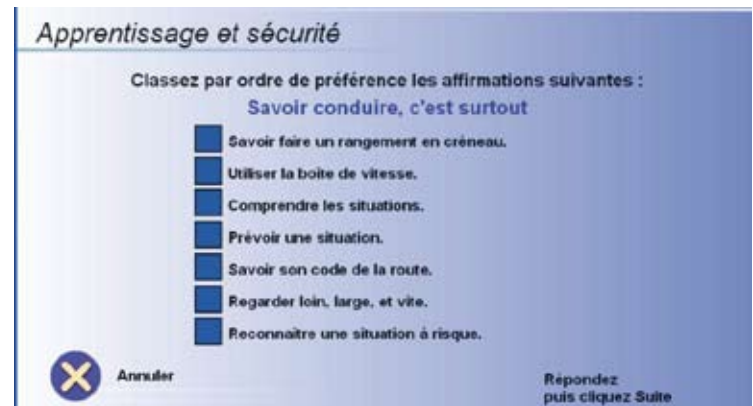
- Steering
- Gear box
- Clutch
- Brakes

For each topic, 12 questions are available and the driver has to answer 3 questions taken randomly from this data bank.

• Learning and safety

Everyone considers vehicles according to the pictures they have of them and that are flattered by advertisements. Some pictures are harmful to social and safe behaviour. A series of tests is presented to evaluate the driver's motivations and attitudes.

Does he perceive the teaching as only an aid to technical and regulatory aspects; or as really essential for learning how to drive (anticipating danger, predicting the behaviour of other road users...).



• Skill: starting / stopping

After testing how he settles into the driving position, the simulator gives a commented demonstration detailing the 5 operations for starting and stopping.

The driver then makes 5 successive starts and stops, with no commentary or help from the simulator.

The exercise is to assess the driver's ability in handling the vehicle, with 3 possible results:

- balanced pressure on the accelerator, control of the clutch;
- difficulties, bumpy stops or one stall;
- no control, sudden stops or several stalls.

• Ability: handling the Steering wheel

The simulator asks the driver to drive along a winding track with several changes of direction.

The exercise enables the driver to be in a driving situation in order to test how smoothly they handle the Driving wheel and their ability to control the vehicles trajectory. 3 possible results:

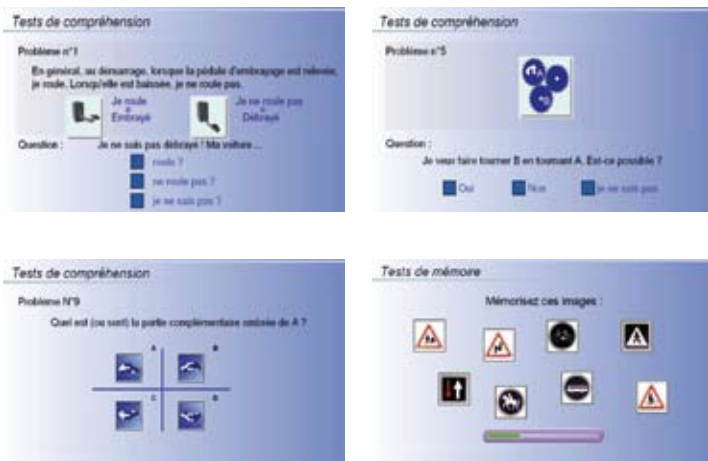
- Coordinated, smooth and precise looking and movements;
- Looking before movements, but with smooth movements;
- Insufficient looking, or bumpy movements.



• Psychological tests

This module includes a series of MCQs to indicate the driver's levels of comprehension and memorisation:

- Mechanical series: each problem is presented with an explanatory phrase which is always a statement followed by a question formulated with a series of negations;
- Logical series of movements: this concerns understanding the rotational direction of various bearings;
- Spatial series: problems of the spatial positions of shapes must be solved by the student;
- Memory: the driver has to memorise 8 images for 10 seconds, and he must recognise.



• Driving: perception

Throughout this exercise, the simulator evaluates the driver's perceptive skills:

- Sense of trajectory and dimension;
- Capacity for observing the surroundings;
- Sense of direction;
- Direction of the eyes.

The simulator recommends that the driver is attentive to signposting and to other users, and to use the indicator when necessary.

The driving takes place in an urban setting and lasts about 15 minutes.



● EVALUATION OF RISK TAKING

SySEC assesses the sensori-motor abilities (control of the accelerator, the brake, the steering wheel, etc.), visual perception, and analyses the driver's behaviour according to a certain number of variables.

After the driving, **SySEC** records measurements of behaviour and calculates digital scores on the performance of each person evaluated.

The studies carried out by the **LAB** (Laboratory of Accidentology, Biomechanics and studies of human behaviour) show that about 80% of road accidents are due to driving error.

The most frequent is a failure to perceive the situation. The approach adopted by **SySEC** is based mainly on devising accident type scenarios, on the basis of an investigation of accidents occurring in the countryside and in an urban environment.



The first scenario takes place on a country road that is normally covered in 5 minutes; during this time the driver is confronted with 6 events:

- A bus coming in the opposite direction conceals a car which is about to carry out a dangerous manoeuvre;
- A motor scooter is travelling in its lane, with a truck in the other lane, slightly over towards the centre of the road;
- A car parked on the roadside slips in dangerously without checking;
- A tractor travelling very slowly comes into view rather late after a hill;
- A pedestrian crosses the road without looking to go to a stationary car on the other side;
- A car coming in the opposite direction turns into the intersection without giving way.



The risk taking assessment illustrates the application of 4 key skills identified by the Accident Research department at Nottingham University (UK):

- Anticipating behaviour;
- Having a grasp of the situation;
- Knowing how to look;
- Driving correctly.



The second scenario takes place in an urban environment normally covered in 5 minutes; during this time the driver is confronted with 6 events:

- A vehicle arriving from behind when leaving the parking space.
- Just after a junction, a pedestrian crosses unexpectedly
- Coming out of a bend, a stationary van forces the driver to slow down suddenly;
- A pedestrian hidden behind a truck suddenly comes out into the road and crosses to the other side;
- A car does not stop at the stop sign, then crosses the intersection without giving way;
- A motor scooter arrives at the STOP sign, pauses, then sets off again without giving way.

● Assessment grid for the driver's behaviour

- Maintaining the vehicle in its lane (side position) according to the speed;
- Maintaining a safe side and front position in turns at intersections;
Right turn;
Left turn.
- Keeping a safe distance:
From the car in front;
From pedestrians.
- Behaving in a safe manner at intersections:
deceleration / acceleration when stopping / setting off;
positioning the car at the stop line;
Giving way;
Right turns;
Left turns.
- Appropriate visual exploration:
- Signalling his intentions;
- Obeying road signs;
- Following the direction signs;
- Using the brake appropriately;
- Obeying speed limits;
- Adjusting the speed to the traffic and weather conditions.

Fiche d'évaluation des conducteurs

Expérience	Attitude	Perception
Permis : 0	Test A : 0	Trajectoire : 0
Conduite auto : 0	Test B : 0	Observation : 0
Conduite avec : 0	Total : 0	Orientation : 0
Où : 0	Habilité	Regard : 0
Vélo : 0	Installation : 0	Total : 0
Cyclo : 0	Démarrage : 0	Emotivité
Moto : 0	Manip volant : 0	En général : 0
Autre véhicule : 0	Total : 0	Crispation : 0
Total : 0	Psycho	Total : 0
Connaissance	Compréhension : 0	
Direction : 0	Mémoire : 0	
Boite : 0	Total : 0	
Embrayage : 0		
Freinage : 0		
Total : 0		

SySEC functions autonomously. As all of the driver's behaviour is continuously controlled by the software, a configurable notation system makes it possible to draw up assessment sheets.

● Result

At the end of this programme the system issues:

- Elements of evaluation for theoretical knowledge;
- Elements of evaluation for the level of driving control;
- Information on certain physical and psychological aspects of the driver.

● **Hardware configuration**

SySEC is composed of :

- One (01) Examiner Position (PC, printer...);
- Five (05) Trainee Positions for theoretical questions before going on to the simulator;
- A driving simulator EF-X, EF-TRUCK or EF-BIKE according to the chosen configuration.

Options: the SySEC system can also be adapted to a specific customer position

● **SySEC EF-X**

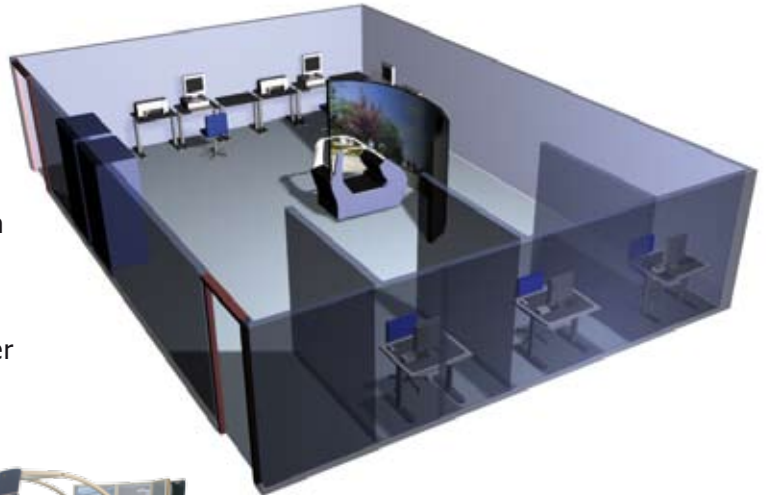
Selection and evaluation system for drivers of light vehicles using the **EF-X** simulator.

A full driving position with an innovative design

Parts and dashboard of car manufacturer origin;
 Left or right-hand drive;
 Adjustable seat, steering wheel, safety belt, gear lever and pedals all very robust, with force gradient;
 Very compact.

Hardware options

Steering wheel motorisation (included on EF-3);
 Video-projectors;
 Instructor position;
 Specific PMR equipment;
 After study, adaptation on a real vehicle.



● **SySEC EF-TRUCK**

Selection and evaluation system for drivers of Heavy Vehicles using **EF-TRUCK** simulator.

Parts and dashboard of car manufacturer origin

Tachograph, revolution counter, pedals, steering wheel, 18 gear gearbox, retarders etc... managed by the simulator and equipped with force gradient.

Options matérielles

Open frame or closed cabin;
 Left or right-hand drive;
 5 x 42" plasma screens or video-projectors;
 Instructor position;
 After study, adaptation to any driving position.



● **SySEC EF-BIKE**

Selection and evaluation system for drivers of mopeds using **EF-BIKE** simulator.

Characteristics of the **EF-BIKE** simulator

- Real moped with parts and dashboard of manufacturer origin;
- Dynamic 2 axle platform; rolling, pitching +/- 10°, 40°/s;
- Handlebar with force gradient.

Options

- Instructor position, networked with several simulators;
- Visual with 3 x 42" plasma screens;
- Panoramic screen;
- Specific Forces Publiques software module.



Classroom layout in Ireland



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